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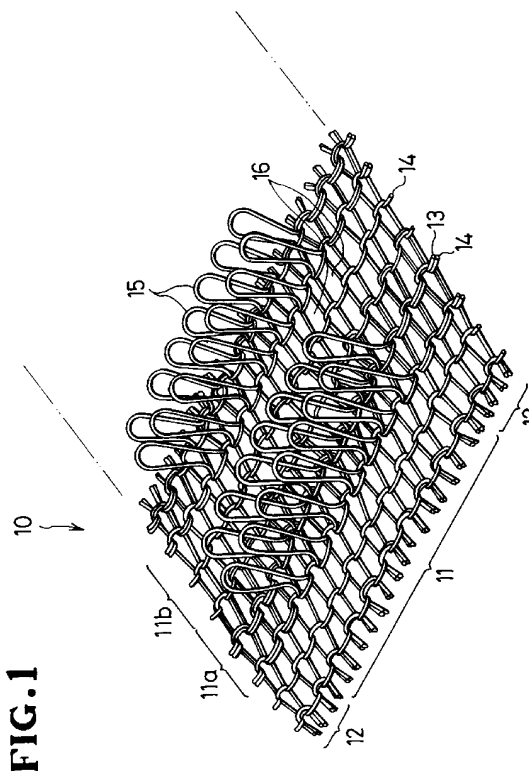
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(54) **Weft-knitted fabric for surface-type fastener.**

(57) A weft-knitted fabric (10, 10') for use a male or female part of a surface-type fastener which comprises an engaging section (11a) having engaging loops (15) or hooks (15') and an air-permeable section (11b) formed by a plain weft-knitted foundation yarn (14), the engaging section (11a) and the air-permeable section (11b) alternating in position with each other across a plurality of courses over the length of the fabric (10, 10').



This invention relates to a knit fabric for use as a female or male part of a hook-and-loop fastener or surface-type fastener for securing an article of garment in a predetermined position.

Numerous hook-and-loop fasteners or what is more lately called "surface-type fastener" have been proposed for securing garment articles such as clothing, footwear, bags, gloves and the like. A warp-knitted fabric carrying on one side a multiplicity of loops is disclosed in Japanese Utility Model Laid-Open Disclosure No. 63-91009 in which the disclosed fabric is provided with holes or perforations in the form of a grid or meander for the purpose of affording an air-receptive or permeability property after the fabric is suitably coated on its reverse side to secure together the joints of constituent yarns. This prior art knit fabric has a drawback in that it is technically and economically infeasible to provide a multitude of perforations or holes uniformly distributed over the entire surface of a warp-knitted fabric.

With the foregoing drawback of the prior art in view, the present invention seeks to provide a weft-knitted fabric having air-permeable zones which can be produced with a maximum of efficiency and a minimum of cost.

The invention further seeks to provide an air-permeable weft-knitted fabric having female or loop members or alternatively male or hook members, the fabric being capable of adjustment as to the degree of permeability to air and the strength of separation between the male and female members. Thus, a fabric product made in accordance with the invention will find wide application as surface-type fasteners for a variety of garment articles, particularly those which require air-receptiveness such as shoes, gloves and the like, or those which are readily washable and fast drying such as mops, mats and the like.

According to the invention, there is provided a weft-knitted fabric for surface-type fasteners which comprises an engaging section having an engaging means and an air-permeable section having a multiplicity of voids, CHARACTERIZED IN THAT said engaging section and said air-permeable section alternate with each other across a plurality of courses over the length of said fabric, and said fabric is coated on its reverse face with an adhesive compound without said voids being plugged up.

The above features and advantages of the invention will become more apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate by way of example a preferred embodiment. In the drawings:-

Figure 1 is a perspective view of a weft-knitted fabric embodying the invention for use as a female part of a surface-type fastener; and

Figure 2 is a view similar to Figure 1 but showing a weft-knit fabric used as a male part of a surface-type fastener.

Referring now to the drawings and firstly to Figure 1, there is shown a weft-knitted female fabric 10 which is formed on a circular-knitting machine having two different level sinkers initially into a cylindrical stock which is subsequently severed to provide a sheet-like material.

The fabric 10 comprises a pile portion 11 extending over a majority of its center region and selvage portions 12, 12 extending on opposite sides of the pile portion 11 longitudinally along respective edges of the fabric 10.

The pile portion 11 of the fabric 10 comprises an engaging section 11a formed from pile yarns 13 having a denier of about 210 and an air-permeable section 11b formed from foundation yarns 14 having denier of 50 - 100. Both yarns 13 and 14 are made of a multifilament of nylon, polyester, polypropylene or like plastics material.

The pile yarns 13 in the engaging section 11a are formed by a high level sinker on a loop-forming machine (not shown) into a multiplicity of rows of loops 15 extending in transverse or weft-wise alignment which serve as a female engaging means. The loops 15 may be split apart to provide mating hooks 15' on a male fabric 10' as shown in Figure 2, in which instance the pile yarns 13' are preferably monofilamentary.

The foundation yarns 14 in the air-permeable section 11b are formed into a plain weft-knitted system having a multiplicity of voids 16 to provide sufficient permeability to air.

According to an important aspect of the invention, the fabric 10 is weft-knitted with the engaging section 11a alternating with the air-permeable section 11b across a plurality of courses of the knit system; viz., every other course as presently illustrated. The number of such courses across which the two sections 11a and 11b alternate with each other over the length of the pile portion 11 of the fabric 10 may be conveniently varied according to the strength of separation between the loops 15 and the hooks 15' and the degree of permeability to air required for a particular application.

The female and male fabrics 10 and 10' thus constructed are coated over their respective reverse faces with a suitable adhesive compound such as a synthetic rubber or resin to bond together all of the knitting yarns to ensure shape retention of the fabric web and to prevent dislocation or pluck-out of the loops 15, in which instance care must be taken so as not to let the adhesive plug up or otherwise seal the voids 16 in the air-permeable section 11b. If necessary, air blast may be used to keep the voids 16 open.

The fabrics 10, 10' are finished by cutting along the selvage portions 12, 12 thereby producing an air-permeable surface-type fastener.

The loops 15 in the engaging section 11a may be disintegrated as by brushing into individual monofila-

ments to enhance coupling engagement with mating hooks 15'.

Claims

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1. A weft-knitted fabric (10, 10') for surface-type fasteners which comprises an engaging section (11a) having an engaging means (15, 15') and an air-permeable section (11b) having a multiplicity of voids (16), CHARACTERIZED IN THAT said engaging section (11a) and said air-permeable section (11b) alternate with each other across a plurality of courses over the length of said fabric (10, 10'), and said fabric (10, 10') is coated on its reverse face with an adhesive compound without said voids (16) being plugged up. 10 15
2. A weft-knitted fabric (10, 10') according to claim 1 characterized in that said engaging means (15) comprises a multifilamentary pile yarn (13) having a denier of about 210. 20
3. A weft-knitted fabric (10, 10') according to claim 1 characterized in that said air-permeable section (11b) is formed by a plain weft-knitted system comprising a foundation yarn (14) having a denier of 50 - 100. 25

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FIG.1

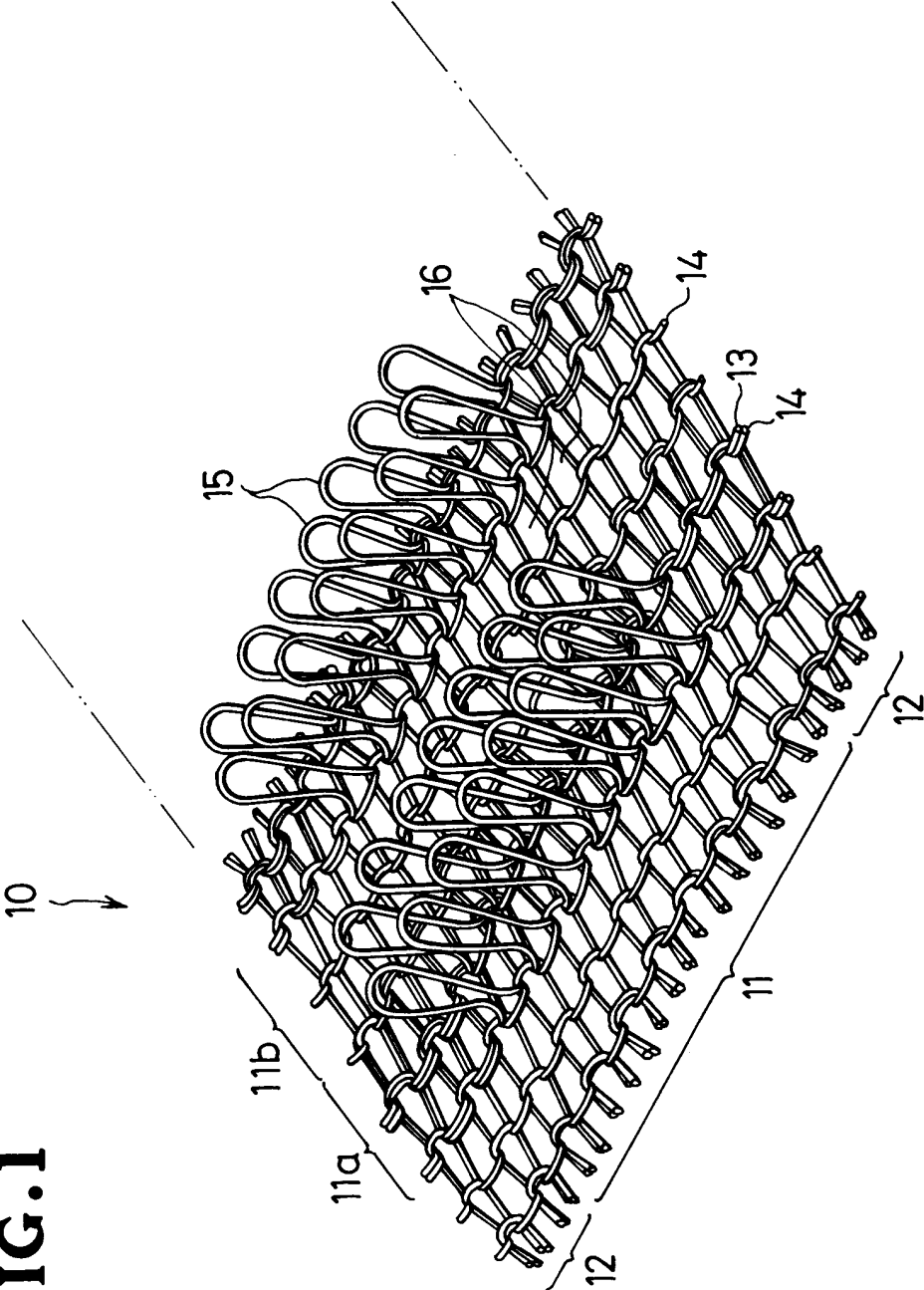
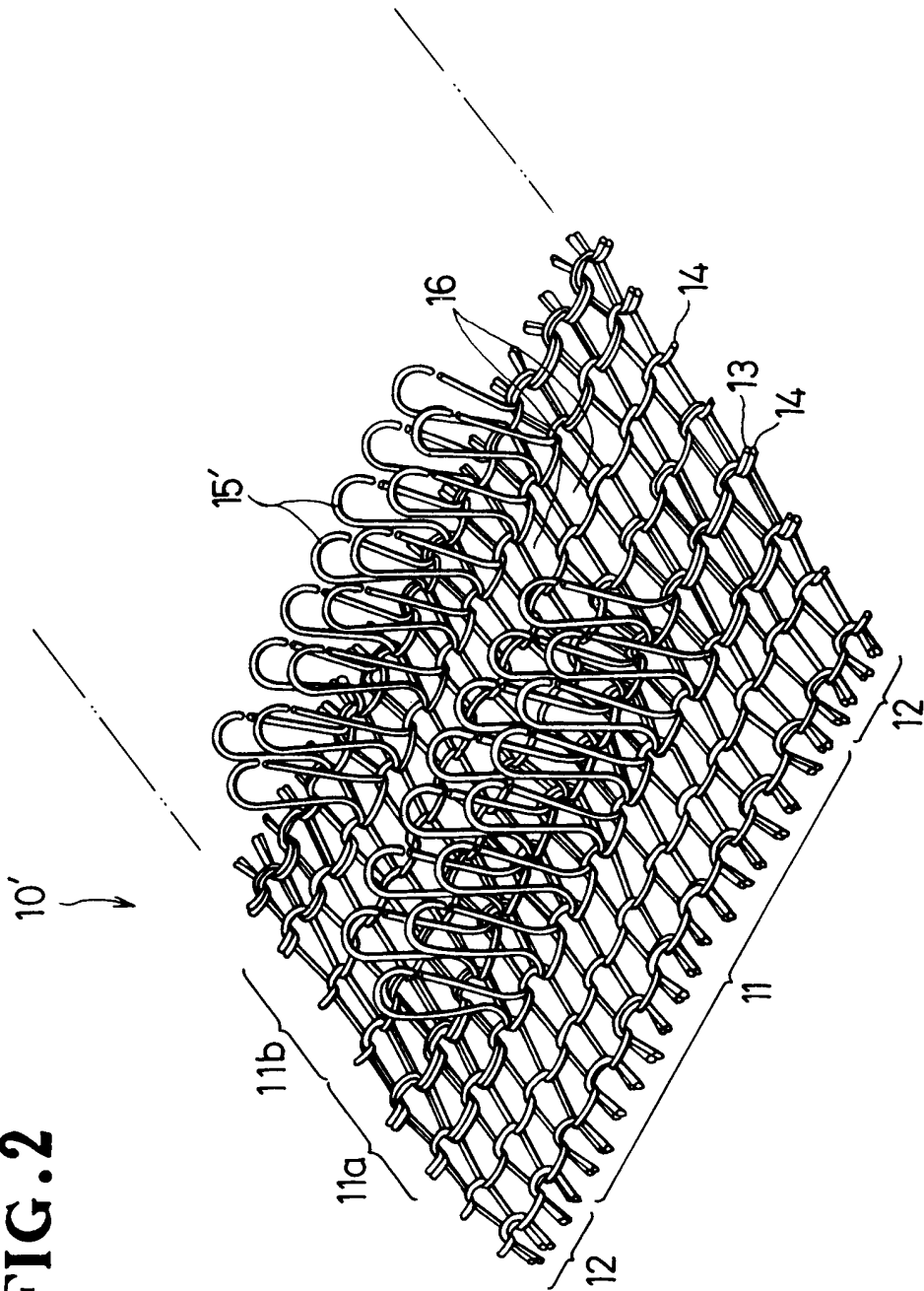


FIG.2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 30 5554

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CLS)
A	US-A-4 705 710 (MATSUDA) ---		D04B1/04 A44B18/00
A	FR-A-2 237 594 (PATAX TRUST REG.) -----		
			TECHNICAL FIELDS SEARCHED (Int.CL.5)
			D04B A44B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15 October 1993	Examiner VAN GELDER, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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